SECTION 3

SITE AND BUILDING INSPECTION SUMMARY



Historical Building Dates





EUA No. 315025-01



Roofing Dates (Date) indicates initial date or roof install and the following date indicates date of anticipated re-roof







Current Site Circulation





EUA No. 315025-01













EDUCATIONAL ADEQUACY ASSESSMENT

School: Lake Mills High School

Enrollment: 417 Students

Configuration: Grades 9-12 Date of Assessment: April 10, 2015

Staff: Approximately 50

Evaluator(s): Eric Dufek, Erica Marty and Paul Raisleger

The following assessment analyzes your facility with respect to how it supports the needs of Students and Educators to support 21st century Education. Special emphasis is placed on how your facility can support the development of the following 21st Century Skills your students will need to compete in a global environment:

A Critical Thinker A Problem solver An Innovator An Effective Communicator An Effective Collaborator A Self Directed Learner Information and Media Literate Globally Aware Civically Engaged Financially and Economically Literate

A facility and its infrastructure can have a large impact supporting educators to develop these skills (*italicized items above*) thru additional information and communications technologies, flexible areas that support small group collaboration, areas which support long term individual/team projects and spaces which support partnerships with your local business community.

The focus of the Education Adequacy at Lake Mills School is centered on the following areas:

- Site General Observations
- Site Safety
- Family & Consumer Education
- Technical & Agricultural Education
- Science
- Special Education
- General Classrooms
- Music Multi-purpose Room
- Media Center
- Gym PE Areas







Site Location

SITE GENERAL OBSERVATIONS

• Layout

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- The school is located on the Western half of the site.
- The main entrance faces Caitlin Drive
- Grounds, parking Lot and Athletic Areas
 - The site slopes to the Athletic fields. All main entries on the West side of the building are at grade. The site bordered by Catlin Drive on the West, East Lake Park Place on the North and Pinnacle to the East.
 - The main entrance faces Caitlin Drive.
 - Staff parking is on the Northern section of the West lot and adjacent to the Tech Ed building.
 - Student and visitor parking in the West lot adjacent to the main entry.
 - Athletic Fields include:
 - o Competition football field
 - o Competition soccer field.
 - o (6) Tennis courts.
 - Practice fields to the East side of property.
 - Competition baseball and softball are located off site.
 - Site does not appear to have storm water retention/detention.
 - Parking lot has two curb cuts that enter and exit to Catlin Drive.
 - Buses line up along the southern edge of the parking lot and on to Catlin. Cars enter the same access point as the buses.
 - Bus parking/garage on the Northern edge of site.
 - Approx. 8 buses serve the High School.

RECOMMENDATION

1. See following section for safety







Site Circulation

SITE SAFETY

- Bus, parent and student traffic is combined into the one way entrance off of Catlin Drive.
 - Main parent drop off is encouraged from the North off of East Lake Park Place.
 - o Access between the upper and lower lots is discouraged.
- Drop Off
 - Student drivers enter the school through the west parking lot doors.
 - Buses drop off students in the west lot where they enter the school.
 - Parents primarily drop off students from East Lake Park Place and they enter the main doors or the north doors.
 - Students that are late enter through the main entrance doors while the parents park on the street.
 - Parents are encouraged to not use the east drive adjacent to the main entrance
- Pick Up
 - All students released at the same time.
 - Student drivers exit the school lot to the West to Catlin Drive.
 - o Buses pick up students in the west lot where they exit the school.
 - Parents primarily pick up students in the West lot next to the buses or in the lower lot by the bus garage.
 - Students and staff need to cross the bus lanes to return to their cars in the upper lot.
 - Walkers exit to sidewalks.
 - Parents are encouraged to not use the North drive adjacent to the parking lot.

RECOMMENDATIONS

- Consider alternate options for pick-up and drop off.
 - Release students a few minutes early to clear the site of all bus traffic.
 - Consider all parent pick up and drop off access to the site off of East Lake Park Place.

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Family and Consumer Education



Family and Consumer Education



Family and Consumer Education



Family and Consumer Education

FAMILY AND CONSUMER EDUCATION

- Existing Conditions
 - Two Distinctive Subject Areas
 - o Textiles
 - Focused on sewing and quilting with tall storage cabinets
 - o Foods
 - (6) individual kitchenettes in a configuration suited for a Home Economics curriculum
 - One instructor for one large space. Lecture space is on one end and kitchenette instruction on the other.
 - Plastic Laminate counters.
 - Residential curriculum.
 - Space is relatively large
 - Both subjects have limited capacity and demand.
 - Both subjects are hands on yet the two spaces have dedicated lab and lecture areas
 - General Classroom Observations
 - Classroom is flexible and provides opportunities to rearrange the lecture area.

- Consider a single lecture space to serve both subjects if a lecture space is needed at all.
- Textile Design
 - Room is designed with 36" high tables on wheels where students use stools or stand at sewing machines
 - Table surfaces are large for laying out patters, cutting fabric, and electrical reels drop down from the ceiling
 - Room layout typically provides (1) dress form mannequin per student
 - Students often use the auditorium stage as a "runway"
- Culinary Arts
 - o 36" stainless steel surfaces all face the front of the room.
 - Appliance could be commercial or residential and could be grouped together or kept separate in a team format
 - Ingredients are all stored in a common location and set out depending on recipe for the day
 - Team "stations" typically do not have enclosed storage areas to keep the stations clean and safe
 - Students often stand but some districts have provided stools if the stations are also us+ed for lectures.
 - Plan for replacement of laminate countertops with stainless steel for durability and sanitation.







Tech Ed Wood Shop



Tech Ed open between metals and wood shop



Ag Ed Classroom



Ag Ed Storage

TECHNICAL AND AGRICULTUREAL EDUCATION

• Existing Conditions

- Location within building
 - o Located on the back of the building adjacent to access drive
 - o Addition in 1975
- Size of and number of spaces
 - Most spaces are adequately sized to serve at least 31 students per academic space.
 - Average class size 21 students.
 - o (1) instructor for the Ag Department
 - (1) lab with multiple storage areas
 - (1) classroom
 - (1) work area for plants and aquatics
 - (1) instructor for the Tech Ed Department
 - (1) woods lab with shared storage
 - (1) metals lab with shared storage
 - (1) Storage area with instructional area.
- Metals and woods lab open to one another.
 - Adequacy for current educational delivery system
 Rooms are adequately designed for the curriculum but the
 - equipment and machinery should be reviewed by local businesses to get a second opinion if the skills they are learning in the labs directly translate to the modern workplace.

RECOMMENDATIONS

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- Consider creating a regional Technical Education focus
 - Limited operational budgets don't allow school districts to maintain several expensive technical education curricula and the equipment associated with the curricula
 - Many districts are considering collaborating with their neighboring districts to create a shared curriculum where each district would have a select focus and the dollars can be focused on maintaining a single program
- Consider collaborating with local manufacturing businesses where the students could get off site instruction and training in the workplace.
- Consider designing a curriculum that allows the same subjects to be contained in less spaces.
- Consider moving the art department closer to the technical education department and incorporating a Project Lead the Way curriculum that would incorporate more science/math and art with the technical problem solving skills (STEAM – Science, Technology, Engineering, Art, Math).
- Review high school utilization analysis for this department to help guide next steps.
- Consider physical separation of the metals and woods areas.



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JEDI Classroom



Chemistry Lab



Science Classroom



Computer Science



SCIENCE

Existing Conditions

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- Location within building
 - Science department is located on the second floor
- Size of and number of spaces
 - Most spaces are adequately sized to serve at least 29 students per academic space.
 - o (1) instructor
 - (1) Bio and Life Science lab
 - (1) instructor
 - (1) Chemistry Lab
- Adequacy for current educational delivery system.
 - Rooms were adequately designed for the curriculum when the school was constructed but the hood location in the Chemistry class room is a visual barrier between the lab and the instructional area.
 - Rooms function as independent subjects with very little collaboration.
 - Existing Furniture and lab equipment duplicates student stations within the room.
 - Each student has a desk and a lab station which requires double the space and double the furniture/casework.
 - Moveable furniture in the Chemistry instructional area is functional but small.
 - o JEDI Classroom set up in traditional model of instruction.
 - Students prefer room as is.

- Consider grouping Math and Science rooms together to take advantage of integrated learning opportunities.
- Science instructional room could be designed with flexible furniture to allow for the same tables and chairs to be used for lecture and lab.
- Consider consolidating subjects and design the rooms to be flexible for multiple curricula.
- Review high school utilization analysis for this department to help guide next steps.





Special Ed Teacher area



Special Ed Classroom



Special Ed Activities Room

SPECIAL EDUCATION

Existing Conditions

- Location within building
 - Dispersed on the lower level.
- Size of and number of spaces
 - Rooms vary in size accommodating between 10 and 28 students per academic space.
 - o (2) instructor s in 323
 - o (1) instructor 103
 - o (1) instructor in 121
- Adequacy for current educational delivery system
 - Rooms were adequately designed for the curriculum when the school was constructed. Some teacher modifications provide sound attenuation and privacy.
 - o Rooms function as independent subjects .
 - Existing furniture is aged but movable. Tables arranged to accommodate groups of (3) in 323.
 - Small room with residential kitchen support instructions for activities of daily living.
 - Building lacks a dedicated sensory room for student population.

- Consider some method to divide the larger room 323 into small quadrants for small group activities.
- Provide dedicated sensory room.







General Classroom



General Classroom



General Classroom

GENERAL CLASSROOMS

Existing Conditions

- Location within building
 - Classrooms are generally located on exterior walls which take advantage of natural daylight.
- Size of and number of spaces
 - Most spaces are adequately sized to serve ON AVERAGE 19-25 students per academic space.
 - Generally (1) instructor per room
 - Staff appears generally appears to be assigned to a single room.
- Adequacy for current educational delivery system
 - Math and Social Studies rooms are on the range of small for classrooms. Typically current planning suggest 900sf is adequate to accommodate classroom flexibility.
 - Rooms function as independent subjects with very little collaboration.
 - Rooms are adequately designed for the curriculum but the classrooms are changing to be more collaborative and investigative.
 - Technology in the classrooms is outdated.
 - Some furniture is movable and will allow for various room and teaming configurations.

- Review high school utilization analysis for the General Classrooms to help guide next steps.
- Building lacks dedicated breakout space for personalized learning opportunities.







Multi-Purpose Room



Multi-Purpose Room

MUSIC / MULTI-PURPOSE ROOM

Existing Conditions

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- Location within building
 - First Floor adjacent to the commons.
- Size of and number of spaces
 - Most spaces are adequately sized to serve at least 30students per academic space.
 - (1) instructor
 - Band 204
 - (1) instructor
 - Music 205
- Moveable wall partition between Music and Commons (Cafeteria).
- Adequacy for current educational delivery system.
 - Rooms were adequately designed as the auditorium when the school was constructed.
 - Rooms can function as independently or be separated with the room divider.
 - Acoustically the surfaces are hard and reflective with little articulation to attenuate sound.
 - Ceiling treatment is painted concrete.
 - Serving line is congested during serving periods.
 - Music room used for after school athletic programs.

- Consider acoustical ceiling and wall panels.
- Consider acoustic wall panels mounted high on the wall to limit damage from after school athletic programs.
- Consider investigating a solution to the traffic congestion during serving periods at the kitchen.







Multi-purpose rooms used for activities.



Main gym

GYM/PE AREAS

Existing Conditions

- Location within building
 - o First Floor Gym in the 1988 addition 7,786sf
 - o Upper gym in the 1964 addition 8,099sf
 - Multi-purpose room on the First Floor
- Location within building
 - All centrally located and easily access from the main central circulation space.
- Size of space
 - HS gym is (1) cross competition basketball court
 - (2) practice courts are not full size
 - Gym mezzanine used for bleacher seating
 - The lower gym is not regulation HS size but appropriate for Middle School and other PE functions.
 - Adequacy for current educational delivery system
 - o HS gym
 - HS regularly uses grade school gym for athletics due to scheduling.

- Review utilization of gyms to see if additional gym space is needed
- Improve ventilation in basement athletic areas if the use remains







LMC Checkout



LMC Study



LMC Media



LMC



MEDIA CENTER/LMC

Existing Conditions

- Location within building
 - First Floor on the West end of the original 1962 building.
- Size of and number of spaces o (1) Librarian
 - Location within building
 - Accessed by one corridor.
 - Located on the second floor which is easily accessed by the student population but not readily accessed by the community.
- Size of space
 - Appropriately sized with opportunities for several classrooms of students to work at the same time.
 - Room is rectangular in shape and as deep as a standard classroom.
- Adequacy for current educational delivery system
 - Furniture is heavy and inflexible
 - There is daylight in the space provided by windows
 - Media center feels detached from the rest of the school due to a lack of transparency from the corridor
 - Room has some comfortable seating.
 - Artificial lighting is all the same.
 - Room is arranged with book stacks on one end and seating on the other

- 1. Consider remodeling media center to provide:
 - a. Transparency from the corridors.
 - b. Flexible, comfortable student sized furniture.
 - c. Spaces for quite individual work and louder interactive group work.
 - d. Transparency from multiple spaces for supervision
 - e. Provide multiple lighting levels.
 - f. Provide some visual interest in ceilings, walls, floors, and work surfaces.



*Data from Institutional Facilities Manager resources, ASHRE research, and School District Facility Manager client information.







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Lake Mills High School

HVAC			
Component or System	<u>Typical Use Lifespan</u>		
Original Firetube Boiler	Years	0 10 20 30 40 50 60	
	25-30yr		
			1964
	Years	0 10 20 30 40 50 60	
High-Efficiency Boiler	20-25yr		
			2005
Packaged Roottop Units	Years	0 10 20 30 40 50 60	
	15-20yr		0005
			2005
Indone Aix Handling Haits	No sure		
Indoor Air Handling Units	Years	0 10 20 30 40 50 60	
Original Duilding	30-35yr		10/4
			1904
Tech-Ed			1975
	Vogro	0 10 20 20 40 50 40	
Unit Vontilators			
	20-2591		1064
			1904
Temperature Controls	Years	0 10 20 30 40 50 60	
	25-30vr		
Pneumatic Controls	20 000		1964
Trane Digital Controls			2005
			2000





*Data from Institutional Facilities Manager resources, ASHRE research, and School District Facility Manager client information.

Lake Mills High School







Exterior Lighting	Years 60	1962 1964 1975 1988 2001 2005
Clocks/Bells/Intercom	Years 20	1962 1964 1975 1988 2001 2005
Fire Alarm	Years 20	1962 1964 1975 1988 2001 2005





*Data from Institutional Facilities Manager resources, ASHRE research, and School District Facility Manager client information.

Lake Mills High School

Plumbing

Plumbing Fixtures	Years	0 10 20 30 40 50 60
Toilets, Urinals, Sinks	30	
	Years	0 10 20 30 40 50 60
Drinking Fountains	20	





BUILDING EXTERIOR INSPECTION REPORT

School: High School Original building 1962. Additions 1964, 1975, 1988, 2001, and 2005.

Date of Assessment: March 26, 2015

Evaluator(s): Paul Raisleger (EUA)

The assessment of site and building systems identifies the condition of categorized elements observed during inspection and graded for relative fitness by the following criteria for expected service.

Good: The reviewed element has been observed to have the following characteristics.

- Is between the beginning and middle of its expected service life.
- Meets optimum functional and / or performance requirements.
- Requires routine maintenance or minor repair.
- Less than 25% of the element is in substandard condition or has failed.

Fair: The reviewed element has been observed to have the following characteristics.

- Is between the middle and end of its expected service life.
- Meets minimum acceptable functional and / or performance requirements.
- Requires attention to repair beyond routine maintenance.
- 25 50% of the element is in substandard condition or has failed.

Poor: The reviewed element has been observed to have the following characteristics.

- Is at or has passed the end of its expected service life.
- Fails to meet functional and / or performance requirements.
- Requires excessive and constant attention, and major corrective repair.
- More that 50 percent of the element is in substandard condition or has failed.

The items numbered below are referenced on the BUILDING INSPECTION PLAN AND SITE PLAN







Window fit and condition



Replace sealant in older windows



Weather stripping to be replaced



Weather strips and gaskets

EXTERIOR ENVELOPE

1. Exterior Windows

- a. Expected Life span 25-30 years
- b. Current Condition: Good/Fair/Poor depending on location.
- c. Window condition varies around the building.
- *d.* Most are insulated units. But older windows are showing greater signs of wear with deteriorating seals and poor fit.
- e. Windows mostly aluminum frames
- f. Majority of glass is insulated double pane.
- g. Older window frames are usually not thermally broken or do not contain high performance insulated glass. Glass performance has improved dramatically over the past 10-15 years and glass is designed to much better sun shading co-efficient (ability to block UV rays) and overall better R-value. (Quality of thermal .conductivity). Single pane or clear glass does not block UV rays or have any insulating value. Insulated glass does not block UV rays or have any insulating value. Insulated glass that is tinted is also recommended.
- h. No flashing at head or sill in some locations.
- i. Gaskets and weather stripping in the older windows is deteriorating.
- j. Sealant needs to be replaced in select locations.
- k. Interior sun control, (blinds, and shades).

RECOMMENDATION

- Consider replacing windows that are not operating correctly.
- Replace all seals and gaskets on windows.
- Replace windows that have rusted frames.
- 2. Roof
 - a. Expected life span 20 years for rubber EPDM, 30 years for Thermoplastic, 40 years for built-up asphalt systems
 - b. Current Condition refer to Roofing Chart for installation and replacement schedule.
 - c. All roofs inspected and repaired annually by Facility staff.
 - d. Roof composition undetermined.
 - e. Scuppers appear in good condition and drain at splash blocks at grade where applicable.

RECOMMENDATION

 None at this time. Maintain according to MFG. standards and LMSD inspections. Replace as directed by roofing mfg.







Slab settling at exterior doors



Loose Weather Stripping



Rust on North door frames



Wall condition at some openings

3. Exterior Doors

- a. Expected life span 20 years for steel, 30 years for aluminum/FRP systems.
- b. Current Condition good/fair
- c. Steel door and frame at service and entry areas. Bottom edges of the door frames showing slight deterioration.
- d. Insulated glass with double panes in all steel doors.
- e. Some paint peeling on steel door frames.
- f. Stoop/slab settling at exit doors.
- g. Steel doors with single pane glazing at West main entry of the original 1960 building. Deterioration of the frames at grade.

RECOMMENDATION

- Monitor the condition of the steel doors for deterioration and maintain as required.
- Replace stoops with scheduled site work.

4. Exterior Walls

- a. Expected life span of masonry, stone and concrete panels 50-100 years with periodic maintenance.
- b. Expected life span of wood and plywood 20-30 years with periodic maintenance.
- c. Current Condition: Masonry is in good condition. Some tuck pointing required.
- d. Wood vertical siding Fair/Poor. Nearing end of material life expectancy.
- e. Original 1962 Building Wall Construction 8" CMU with face CMU. No wall insulation or air space. Uninsulated spandrel glass section above the wall CMU and 30" deep ribbed metal panel fascia.
- f. 1964 Building Wall Construction 12:" CMU with face brick veneer toothed every 6th course (English Common Bond) Grouted solid. No insulation. At the roof transom location 8" CMU with 4" precast concrete panel no insulation or air space.
- g. 1975 Addition Wall construction 7" Concrete Tilt-Up Panel with 2" Foam insulation, gypsum board interior finish.
- h. 1988 Building Wall Construction 8" CMU 2" Rigid Insulation, Air space and modular masonry veneer.
- i. 2001 Building Wall Construction 8" CMU 2" Rigid Insulation, Air space and modular masonry veneer.
- j. 2005 Building Wall Construction 8" Precast Concrete wall panel with 2" ridged insulation and 2 ½" concrete face cover. At the main public entry 6" metal studs with batt insulation, 1" rigid insulation and masonry veneer.
- k. No expansion, control joints or weeps in the original buildings.
- I. Face brick in good overall condition. Some cleaning required.
- m. Mortar joints generally in good condition little cracking despite lack of control joints.





Tuck Pointing areas



Tuck Pointing on Auditorium



Tuck Pointing at CMU



Wood siding condition



- n. Wood siding above windows generally in Fair/Poor condition, weathered. Some degeneration.
- o. Some areas where the flashing wraps up the adjacent wall there is degraded sealant,
- p. Generally all joints between wood siding and adjacent materials are open or in poor condition.
- q. Paint peeling on the original 1962 block building.
- r. Metal wall damaged on the link to the Tech Ed building.
- s. Some cracking on the precast concrete walls of the Tech Building.

- Remove rust from steel lintels and paint with high quality enamel.
- Remove and replace all degraded sealant and replace with new.
- Consider replacing all wood siding with an appropriate replacement exterior material. If a wood grain appearance is desired consider cement board siding.
- Strip and paint all peeling areas around the building.
- Tuck Point all masonry areas as needed.
- Tuck point the cmu on the Original 1962 Building.
- Consider cutting an aluminum cap on the 1988 gym piers. The exposed brick in this area will continue to degrade.
- Consider replacing the damaged metal panel on the link to the Tech Building.
- Repair the cracking concrete panels on the Tech Building as needed.
- Re-caulk joints as required.
- Continue routine maintenance.

EUA No. 315025



Rust on lintels



Siding condition/damage at Tech Link



Roof to wall



Concrete panel condition





Canopy



Concrete Column rust



Rust on underside of canopy



Fascia Rust



Entry Canopy/Overhangs / Fascia a. Life Expectancy: Same as but

- a. Life Expectancy: Same as building depending on the materials used and detailing.
- b. Current Condition of the Fascia: Good.
- c. Current Condition of the Soffits: Good where applicable
- d. The Original 1962 building has a metal canopy and entry feature.
- e. Peeling paint on painted fascia sections.
- f. Substantial surface rust on the 1962 entry canopy.
- g. Steel I Beam columns rusted at grade.
- h. Main entry canopy has been upgraded recently (2013) and is in good condition.

- Remove all peeling paint on fascia sections and repaint with high quality paint.
- Remove all rust on the 1962 canopy and I beam columns and repaint with high quality paint.
- Repair coping and fascia as required.
- Maintain as required.

Lake Mills School District Facilities Study Building Inspection Report – High School



Cracked and settled concrete



South Access Road



Asphalt condition at bus barn



Vault



6. Walkways, Asphalt and Drainage

- a. Life Expectancy: 20 years.
 - b. Current Condition: Fair / Poor
- c. Main concrete walk areas in good overall condition leading up to the main entry access doors.
- d. Some concrete areas are cracked but no settling seen.
- e. Stoops outside the exit doors of the gym and 1962 building are not ADA.
- f. Asphalt south of the Auditorium area aged and at the end of its service life.
- g. Asphalt in the parking lot next to the bus garage in poor condition showing general cracking and alligator cracking which is a sign of poor subsurface failure, repeated over loading and poor drainage. Ponding water in these areas will continue to deteriorate the asphalt.
- h. Grade does not consistently slope away from the building.
- i. Hard surfaces directly next to all access doors in the 1962 and 1988 building are in excess of 3" below the threshold which is not compliant with ADA.
- j. Concrete walks leading up to the 1962 building and at the Auditorium have cracked and settled unevenly.
- k. The lid on the abandoned electrical vault on the North side of the building is failing and settling.
- I. Exterior railing on the North side of building adjacent to the generator is failing. The concrete steps are deteriorating and some railing supports are no longer anchored into the steps.
- m. Railing on the East side of the Auditorium is showing signs of deterioration.

- Replace the South parking lot with new asphalt. Areas of land fill that are unstable should be avoided.
- Grade landscape areas away from the building.
- Repair, clean and paint the railings on the East side of the Auditorium.
- Replace the railings on the North side of the building.
- Repair and replace the vault lid.
- As the asphalt and concrete is replaced outside the egress doors, the slope will need to be ADA compliant.



Stair condition at North site stair



North site stair



Lip at exit doors similar at the 1988 Gym addition. Not ADA.



Asphalt condition at South Lot



Stair to East of Auditorium



Grade should slope away from building.



HEATING VENTILATION AND AIR CONDITIONING

The following report is the result of a site visit by Randy All of Fredericksen Engineering that occurred on March 26, 2015. Site observations and discussions with staff were all used in the preparation of this report.

The original building was constructed in 1964. A total of five (5) building additions have been constructed since that time.

HEATING SYSTEM

EXISTING HEATING SYSTEM

The building is currently heated by a hot water boiler plant consisting of two boilers. The first boiler is a National Boiler firetube-type rated at 78 horsepower or 2,624,000 btu gross output. The second boiler is an Aerco Benchmark series high-efficiency condensing type rated at 1,900,000 btu gross output.

Hot water is distributed throughout the facility by two separate pumping circuits. Each circuit consists of two constant-flow pumps piped in parallel with the second pump serving as a stand-by. The first set of system pumps serves the majority of the building while the second set of pumps serves the tech-ed addition. System water temperature is controlled through the use of an automatic 3-way mixing valve located within the boiler room.

OBSERVATIONS

- The National Boiler is original to the building and is in marginal condition at best. The Aerco boiler is relatively new and was installed to replace a second National Boiler that was removed.
- The current constant flow pumping systems and 3-way mixing valve water temperature control are older methods of boiler plant control and do not take advantage of the high-efficiency capabilities of the Aerco boiler.

RECOMMENDATIONS

 Remove the existing National Boiler and expand the boiler plant with additional high-efficiency condensing boilers and variable flow pumping systems with digital control. This type of updated boiler plant and control will optimize boiler and pumping efficiencies and reduce operating costs.

Budget Estimate \$200,000

VENTILATION AND AIR CONDITIONING SYSTEMS

EXISTING VENTILATION AND AIR CONDITIONING SYSTEMS

The building is ventilated by a combination of unit ventilators, packaged rooftop units, and indoor air handling units.







Hot Water Boiler

The classrooms and IMC on the west end of the building are served by floormounted unit ventilators located along the outside wall of each room. Each unit contains a hot water heating coil, supply fan, and outside air and return air automatic dampers. The unit ventilators within the IMC also contained unitmounted controllers instead of wall-mounted thermostats.

The west classrooms are also air conditioned by two (2) single-zone packaged rooftop units. The IMC is air conditioned by an indoor air handling unit that is piped to an outdoor air-cooled condensing unit.

The 2005 auditorium addition and remodeling project provided packaged rooftop heating and cooling systems for the auditorium, lobby, and east classrooms, weight room, and industrial arts room. The classrooms are served by individual duct-mounted hot water booster coils for zone control.

The lower level science and business classrooms are served by an indoor air handling unit that contains a hot water heating coil and direct-expansion cooling coil that is piped to an outdoor air-cooled condensing unit.

The gymnasium is served by a packaged rooftop heating and cooling unit.

The lower level locker rooms are served by horizontal, ceiling-mounted unit ventilators with hot water heating coils and ducted exhaust systems.

The tech-ed area is served by indoor constant volume air handling units with hot water heating coils. The wood shop contains a dust collection system that is ducted to individual pieces of shop equipment. The welding shop contains welding booths with individual welding exhaust hoods that are ducted to a central exhaust fan. Both the welding and woods shops are served by the same air handling unit. The auto shop is served by a separate air handling unit and room exhaust system.

The administrative offices are served by a single-zone packaged rooftop heating and cooling system with a programmable thermostat.

The Owner indicated that the existing air handling units serving the Band, Commons, Chorus, and Multi-Purpose Room Main Entry are going to be replaced with packaged rooftop units in the summer of 2015.

OBSERVATIONS

- With the exception of the 2005 rooftop units, the majority of the equipment in the building is original, in marginal condition, and has exceeded expected service life. In particular, the indoor air handling units are all original and in need of replacement.
- The Owner commented on ventilation issues within the tech-ed area with respect to odors and fumes that migrate from the shops into the corridor and other adjacent areas of the building.
- At the time of this site visit, the air quality within the IMC did not seem to be as fresh as should be expected. The room actually felt stuffy.





RECOMMENDATIONS

1. Replace the existing indoor air handling units serving the tech-ed shops, lower level science classrooms, and the IMC.

Budget Estimate \$160,000

 Revise the air handling systems serving the tech-ed shops to provide individual air handling units for the woods and welding shops interlocked with the specific exhaust systems to properly control room pressures. Room pressure control will also help to address the odor and fume migration issues.

CONTROL SYSTEMS

EXISTING CONTROLS

Currently, the building is controlled by multiple systems and system types. The original building and older additions are served by pneumatic controls that are connected to a Johnson Controls Metasys head-end to assist with occupied-unoccupied scheduling. The 2005 addition and remodeling systems are served by a Trane digital control system.

OBSERVATIONS

• Pneumatic controls are outdated by today's standards. These systems require frequent calibration of the control components and replacement parts are difficult to obtain. Qualified service technicians are also difficult to find as the industry has made a complete changeover to digital control.

RECOMMENDATIONS

- Replace the pneumatic control system and current Johnson and Trane systems with a single-source, digital Building Automation System (BAS) with programming strategies to optimize building energy usage and webbased functionality for remote accessibility.
- Depending on the Owner's experience with Johnson Controls and Trane, the central BAS could be an extension of one of these two systems, or it could be a completely new system since such an extensive amount of replacement and updating is required.

Budget Estimate \$2.50/sq.ft. of areas served by pneumatics





ELECTRICAL

The following report is the result of a site visit by Curt Krupp of Muermann Engineering, LLC that occurred on March 26, 2015. Site observations and interviews were used in the preparation of this report.

The original building was built in 1955. There has been one addition to the building in 2001

ELECTRICAL SERVICE

OBSERVATIONS

- The facility is fed with one 2000 amp, 120/208 volt 3 phase 4 wire electric service. The service was installed as part of an addition in 2012. The service is a QED square D switchboard which contains a main breaker and an I-line distribution section.
- The service had a recorded peak demand of 510 Amps.
- The service has capacity for additions as it currently stands.
- The utility owned distribution transformer feeding the 2000 amp service is located in the back of the facility located on a concrete pad integral to a retaining wall and stair landing.

RECOMMENDATIONS

1. The Main 2000 Amp service in the facility has capacity for future additions and addition space on the I-line panel is present. The service panel is approximately 4 years old and is in good condition. We do recommend the breakers in the switchboard be exercised each year to ensure they operate properly. This should be done by a licensed electrician and over a pre-planned outage.

BRANCH PANELS

OBSERVATIONS

- Most existing panels have very limited space and are dated to the original construction of the facility. There have been upgrades to some of the panel in the newer addition to new Sq D panels.
- There are approximately 12 existing panels that are over 40 years old and should be scheduled for replacement.





Utility Transformer



Main Service



Old panleboard



Lake Mills School District High School Facilities Study Electrical Inspection Report



Old Panelboard



Surface Receptacle

RECOMMENDATIONS

- 1. Keep existing new panels in place add additional circuits if required.
- 2. Replace existing panels over 40 years old with new Panles in place. Breakers over 20 years old can fail as heat, dirt and corrosion over time can cause breakers to not open upon a fault.

RECEPTACLES

OBSERVATIONS

- Three receptacles with one circuit is present in most of the existing classrooms.
- Surface conduit with stamped steel boxes is present in the older classrooms
- Surface raceway with receptacles and low voltage cabling was installed to feed teacher desk location and interactive boards in some rooms.
- We noticed some broken receptacles and faceplates.

RECOMMENDATIONS

- 1. Additional receptacles can be added to existing rooms if required. A typical new classroom in Wisconsin is provided with 9 receptacles and 3 circuits.
- 2. Broken receptacles and plates can be replaced as part of a maintenance program.



INTERIOR LIGHTING AND LIGHTING CONTROLS

OBSERVATIONS

- A majority of the existing fluorescent fixtures in the building have been converted to T8 lamps and ballasts. The new ballasts and lamps were installed into the existing fixture housings or replaced with new as remodeling occurred over the years. Lighting motion sensors were present in most areas. No day lighting sensors were present.
- Most of the fixtures were surface mounted or semi recessed due to the construction type and limited room above the existing ceilings
- The gym was recently upgraded to 2x4 high bay type fluorescent lighting.
- We did note areas where incandescent fixtures are installed with incandescent lamps.



Ald Stude Lighting

• Old style fixtures were upgraded to T8 in the locker rooms. Some fixtures were damaged and in need of replacement.

RECOMMENDATIONS

- 1. Provide new Fluorescent to replace the existing incandescent fixtures.
- 2. Replace fixtures in the locker room with new high abuse T8 type



Old Exit Light

EMERGENCY LIGHTING

OBSERVATIONS

- Exits lighting in the High School are old housings with retrofit lamps.
- Emergency power is provided to fluorescent fixtures thru the emergency generator.
- The generator was not started during the site investigation. We did not investigate how many fixtures were powered thru the emergency generator. Typically buildings of this age do not comply with the new light levels required for egress.

RECOMMENDATIONS

- 1. Replace all the exit lighting with new LED type.
- 2. Provide and install emergency lighting in all areas of the facility to bring the facility up to current code if required. This will require starting the generator and providing a survey of light levels in all paths of egress.
- Current code also mandates a specific light level outside all egress doors on the exterior of the building. This should also be considered as an upgrade.



Old Exterior Lighting



OUTDOOR LIGHTING

OBSERVATIONS

- The majority of the outdoor lighting consists of wall mounted or parking lot pole lighting and was converted to LED.
- Some fixtures are older style HID type.

- 1. As increased security is addressed, the district may consider adding security lighting around the perimeter of the facility.
- 2. The district may also consider replacement of the old style HID fixtures to LED type.





Cords



Air Duct

DATA

OBSERVATIONS

- Data cabling is provided to classrooms and office areas. Cat 5 and Cat 6 cabling was present.
- Wireless was also installed in some areas.
- The facility appears to have 8 data distribution locations consisting of some floor mounted open racks and some wall mounted enclosed racks. Data racks have fiber to each from the data racks located in the electrical service entrance location.
- The main server for the district is located in the new Middle school facility.
- We observed a lot of cabling above the ceiling not supported and installed untrained over ductwork, piping and light fixtures. This is typical in older facilities and may cause data network issues with speed and connectivity.
- Data closets have a lot of extension cords, haphazard cabling and other equipment not associated with data system.
- One data closet has been modified to allow for additional air circulation by removing the grill and extending ductwork into the area.
- Smart boards and projectors are installed in each room.

- 1. New data drops can be added at any point. A possible new data rack may be required to accommodate any new rack mounted equipment.
- 2. Provide independent AC unit to serve data closet
- 3. Remove all equipment not associated with data systems and clean dirt and debris from equipment.



Surface data box



Above ceiling wiring



Floor Data Rack







Closed Circuit TV

SECURITY (CCTV/ACCESS CONTROL)

OBSERVATIONS

- A CCTV system is installed and consists of digital based cameras wired with coax and power cabling. Recording is done with a DVR. There are approximately 34 cameras present.
- Cameras are located on the interior and exterior of the facility.
- There are select exterior doors with access controls. This system is networked and is controlled with FOB's. A controlled entry exists at the main office and doors controlled with a push button release at the secretary desk location. It appears to be functioning properly and can be expanded. The district indicated no plans are in place to expand this system.

RECOMMENDATIONS

1. Expand the CCTV system as required. The district indicated they will be adding cameras to this system. A possible upgrade is to add IP cameras to allow for the system to be converted to a full IP solution in the future.

FIRE ALARM SYSTEM

OBSERVATIONS

- The fire alarm system is a Johnson controls head end. District staff indicated the system is slowly failing and in need of an upgrade.
- Smoke detectors are present in corridors.
- Horns, strobes and pull stations are present.

- 1. Replace the system with new addressable devices to bring the facility up to full code compliance. This will require new a new head end, devices and wiring.
- 2. In the near future the state of Wisconsin will adopt the new version of the IBC. The new version requires school facilities to install a voice annunciated fire alarm system. This simply means that a speaker in lieu of a horn needs to be installed. This also requires more devices in areas to allow for clear annunciation. Depending on when this is adopted and when the district decides to replace the system will determine the type of system installed.
- Staff indicated new roof top units will be installed this summer. The district should verify if new duct smoke detectors are required on the equipment and connect to the fire alarm system to meet code compliance.









Intercom Rack

CLOCK/PUBLIC ADDRESS SYSTEM

OBSERVATIONS

- The building is furnished with a Rauland Telcore switch type intercom system with the head end located in the office. Serviced by Select Sound
- Staff indicated the intercom is starting to fail. The system is approximately 20 years old.
- Paging is done to rooms thru phones and intercom speakers.
- Rauland system clocks have been removed and replaced with Primex wireless type.

RECOMMENDATIONS

 The system is nearing the end of its lifespan and should be considered for replacement. Many schools in Wisconsin are converting the old style intercom systems to IP type and eliminating the head end racks. This allows the system to be operated with software. This solution would require replacement of the speakers in the rooms with new IP type.

EMERGENCY POWER

OBSERVATIONS

- An emergency generator is located in the boiler room. The set is dated to the original construction of the facility. It is a Kohler 25 KVA 120/208 volt 3 phase 4 wire. The set is natural gas fired and water cooled.
- A newer transfer switch was recently installed.
- There were shared non live safety and life safety loads connected to the emergency panel, this is also not allowed per code.

- This system has exceeded its useful life span and should be replaced with a new set, exterior mounted to allow for proper code compliance, provide two distribution branches, a life safety and non-life safety branch to separate the existing loads to also bring that portion up to code compliance.
- 2. A possible addition to add emergency power to data closets to allow the network and phone system to operate in a power failure.







Old Generator

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Open J Box

GENERAL

OBSERVATIONS

- No master emergency shut off was provided on the Tech Ed panels. We would recommend an emergency shut off with a contactor to shut down all shop equipment if the emergency switch was activated.
- We noted open wiring in the tech areas. This should be routed in conduit and properly supported.
- All shop equipment in Tech Ed labs should be equipped with a magnetic starter. This provides protection in the event of a power fail the equipment will not start back up after power is restored.
- We observed miscellaneous junction boxes that should be covered.



Exposed Wiring



Exposed Wiring



Non Mag Starter







CoolerWall hung



Water closet



Urinals



PLUMBING SYSTEMS

The following report is the result of a site visit by Juli Simonet of Muermann Engineering, LLC that occurred on March 26, 2015. Site observations, construction plan review, and discussions with staff were all used in the preparation of this report.

The original building was built in 1955. There has been one addition to the building in 2001 and the kitchen was remodeled in 2005.

PLUMBING FIXTURES

OBSERVATIONS

- Many of the plumbing fixtures are original to the building and are in poor / fair condition.
- The lavatories are porcelain, wall hung units with manual faucets.
- Water closets consist of a combination of wall hung fixtures and floor mount fixtures. They are all manual flush valve fixtures.
- The urinals are floor mount units with a mixture of timed flush valves and manual flush valves.
- The water coolers are a combination of original single unit fixtures and updated water coolers with bottle fillers. The owner has been replacing the units as needed.
- The toilet rooms near the second floor Auditorium have been upgraded and the fixtures are in good condition. The new plumbing fixtures consist of wall hung toilets with manual flush valves, counter mount lavatories with manual wrist blade faucets and floor mount urinals with sensored flush valves. They appear to be ADA compliant. The electric water cooler outside of the toilet rooms is a dual / recessed unit that is ADA compliant.
- The first floor science rooms have acid-resistant countertops with integral acid resistant sinks. The faucets are gooseneck faucets with cross handles. The science room piping is acid resistance PVC piping and it is routed thru an acid basin located in the storage room between the two classrooms. One of the science rooms has an emergency eyewash fixture installed. The plumbing fixtures are in good condition.
- The home economics rooms have several stainless steel 2-compartment sinks and one commercial grade free-standing 2-compartment sink with drainboards. All of the plumbing fixtures are in good condition.
- The first floor shower rooms contain gang-type pedestal shower units. The units are original to the building and are not ADA compliant.
- The kitchen sinks are piped thru an in-floor Schier 100 GPM grease interceptor. The conveyor type-dishwasher is also piped thru a Schier 200 GPM in floor grease interceptor. Both interceptors appear to be in good condition and are well maintained.



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Water Cooler



Auditorium Lavatories

- 1. Schedule the replacement of the existing toilet room fixtures with low flow, ADA compliant fixtures.
- 2. Schedule replacement of any old, non-ADA compliant water coolers with ADA compliant units with bottle-fillers.
- 3. Schedule replacement of the shower pedestals with new low-flow group shower systems and new ADA compliant shower units as required.



Auditorium Water Closet



Auditorium Water



Acid Basin















DOMESTIC HOT WATER

OBSERVATIONS

• The building hot water is supplied by (2) Rheem Rudd high efficiency, gas-fired water heaters located in the boiler room on the first floor. Both water heaters were replaced in November of 2013 and are in very good condition and adequately sized for the current loads.

RECOMMENDATIONS

1. None

WATER TREATMENT

OBSERVATIONS

• There is a water softening system in the first floor boiler room that softens the hot water system only. The system is a Culligan single-tank system and it appears to be in good condition and adequately sized for the current loads.

RECOMMENDATIONS

1. None

PIPING SYSTEMS

OBSERVATIONS

- The sanitary and storm piping are cast iron piping original to the building and appear to be in fair condition. The owner has had no problems with the existing pipe leaks or with back-ups in the building.
- The owner did indicate an issue with roof leaks in the Tech Ed area, but has plans to replace that roof in the summer of 2016.
- The existing water piping is copper piping original to the building. The piping appears to be in fair condition.
- The building has a 3" water service with a 3" Sensus water meter located in the first floor boiler room.

RECOMMENDATIONS

1. All interior & exterior sewers belwo grade should be investigated with a sewer camera. Any portions of the piping found to be deficient should be replaced.





Water Softener



Sanitary Piping





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Fire Protection Entrance

FIRE PROTECTION SYSTEMS

OBSERVATIONS

• A 4" dedicated water service is brought into the building for the fire protection system and the entrance is located in a closet outside of the new second floor auditorium. The fire protection system is a wet system that provides coverage for the new auditorium, corridor, auditorium entrance, toilet rooms, and the stage. The remainder of the facility is not sprinklered. The system is up to date on testing and appears to be in good condition.

RECOMMENDATIONS

1. None.



